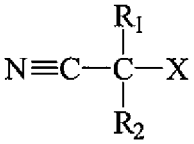
Amendments to the Claims:

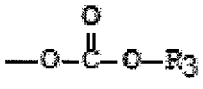
This listing of claims will replace all prior versions, and listings, of claims in this Application:

Listing of Claims:

1. (Canceled).
2. (Canceled).
3. (Canceled).
4. (Canceled).
5. (Canceled).
6. (Canceled).
7. (Canceled).
8. (Currently amended) A non-aqueous electrolyte for use in a lithium-ion battery which comprises (1) at least one electrolyte salt selected from the group consisting of $LiPF_6$, $LiBF_4$, $LiAsF_6$, $LiCl_4$, $LiN(SO_2CF_3)_2$, and a lithium perfluoro-sulfonate and the combination thereof, (2) at least a first non-aqueous solvent of cyclic carbonate and (3) at least a second non-aqueous solvent being at least one of the nitrile compounds represented by the following general formula (I):



(I)

wherein R_1, R_2 are selected, independent of one another, from the group consisting of hydrogen, C_{1-3} alkyl, fluorinated C_{1-3} alkyl groups; wherein X is selected from carbonate radical having a chemical structure of  wherein R_3 is selected from the group consisting of C_{1-3} alkyl and fluorinated C_{1-3} alkyl, wherein the oxygen of the carbonate is chemically bonded to the carbon of the cyano group through no more than one carbon, wherein the first solvent is present in an amount of 5 % by weight or more, wherein the second solvent is present in an amount of from about 20 to about 95% by weight as of the total of non-aqueous solvents and said nitrile is electrochemically stable up to at least about 4.2V.

9. (Previously presented) The non-aqueous electrolyte of claim 8, wherein the ionic conductivity of said electrolyte is greater than 1 x 10^{-3} S/cm at about –30°C.

10. (Previously presented) The non-aqueous electrolyte of claim 8, wherein the ionic conductivity of said electrolyte is greater than 3 x 10^{-4} S/cm at about –50°C.

11. (Previously presented) The non-aqueous electrolyte of claim 8, wherein the weight loss of said electrolyte is less than 3% after heated at 90°C for 2 hours.

12. (Previously presented) The non-aqueous electrolyte of claim 8, wherein the weight loss of said electrolyte is less than 5% after heated at 90°C for 4 hours.

13. (Previously presented) The non-aqueous electrolyte of claim 8, wherein the freezing point of said electrolyte is less than –60°C.

14. (Previously presented) The non-aqueous electrolyte of claim 8, wherein the boiling point of said nitrile is higher than 120°C.

15. (Previously presented) The non-aqueous electrolyte of claim 8, wherein the flash point of said nitrile is higher than 60°C.

16. (Previously presented) The non-aqueous electrolyte of claim 8, wherein the molecular weight of said nitrile is smaller than 200.

17. (Canceled).

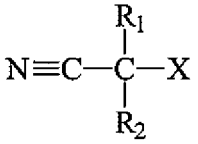
18. (Canceled).

19. (Canceled).

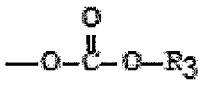
20. (Canceled).

21. (Canceled).

22. (Currently amended) A method of making a lithium-ion battery which comprises (1) at least one positive electrode made of lithiated metal oxide selected from the group consisting of $LiCoO_2$, $LiNiO_2$, $LiMn_2O_4$, $LiFePO_4$, and $LiCo_xNi_{1-x}O_2$ wherein the x is from 0.1 to 0.9, (2) at least one negative electrode made of carbonaceous material selected from the group consisting of coke and graphite, (3) a separator membrane, and (4) a non-aqueous electrolyte which comprises (i) an electrolyte salt, (ii) a first non-aqueous solvent, and (iii) a second non-aqueous solvent being at least one of the nitrile compounds represented by the following general formula (I) :



(I)

wherein R_1, R_2 are selected, independent of one another, from the group consisting of hydrogen, C_{1-3} alkyl, fluorinated C_{1-3} alkyl groups; wherein X is selected from carbonate radical having a chemical structure of  wherein R_3, is selected from the group consisting of C_{1-3} alkyl and fluorinated C_{1-3} alkyl, wherein the oxygen of the carbonate is chemically bonded to the carbon of the cyano group through no more than one carbon, wherein the second solvent is present in an amount of from about 20 to about 95% by weight as of the total of non-aqueous solvents, the method comprising the steps of:

(a) assembling battery by sandwiching at least a separator membrane between at least a positive electrode and at least a negative electrode,

(b) packaging the assembled battery cell into a battery case,

(c) preparing said non-aqueous electrolyte, and

(d) adding the non-aqueous electrolyte into the battery case

wherein said nitrile is electrochemically stable up to at least about 4.2V.

23. (Previously presented) The method of claim 22, wherein said electrolyte salt is a mixture of $LiPF_6$ and $LiBF_4$ in a molar ratio from about 90:10 to about 50:50.

24. (Previously presented) The method of claim 22, wherein the first solvent is present in an amount of from about 5 to about 80 by weight as of the total of non-aqueous solvents.

25. (Previously presented) The method of claim 22, wherein the second non-aqueous solvent is selected from the group consisting of 2-cyanoisopropyl methyl carbonate, and cyanomethyl methyl carbonate.

26. (Previously presented) The method of claim 22, wherein the second non-aqueous solvent is present in an amount of from about 25 to about 80% by weight as of the total of non-aqueous solvents.

27. (Previously presented) The method of claim 22, wherein the second non-aqueous solvent is present in an amount of from about 30 to about 50% by weight as of the total of non-aqueous solvents.

28. (Previously presented) The method of claim 22, wherein said electrolyte salt comprises a cation and an anion, said cation being selected from the group consisting of lithium ion, sodium ion and potassium ion, and said anion being selected from the group consisting of anions of halides of elements of the groups IIIa and Va of the periodic table, halogen anions, and perchloric acid anions.

29. (Previously presented) The non-aqueous electrolyte of claim 8, wherein said electrolyte salt is a mixture of $LiPF_6$ and $LiBF_4$ in a molar ratio from about 90:10 to about 50:50.

30. (Previously presented) The non-aqueous electrolyte of claim 8, wherein the first solvent is present in an amount of from about 5 to about 80 by weight as of the total of non-aqueous solvents.

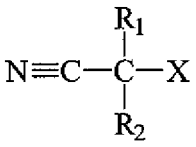
31. (Previously presented) The non-aqueous electrolyte of claim 8, wherein the second non-aqueous solvent is selected from the group consisting of 2-cyanoisopropyl methyl carbonate, and cyanomethyl methyl carbonate.

32. (Previously presented) The non-aqueous electrolyte of claim 8, wherein the second non-aqueous solvent is present in an amount of from about 25 to about 80% by weight as of the total of non-aqueous solvents.

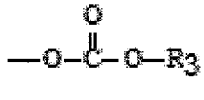
33. (Previously presented) The non-aqueous electrolyte of claim 8, wherein the second non-aqueous solvent is present in an amount of from about 30 to about 50% by weight as of the total of non-aqueous solvents.

34. (New) A lithium-ion battery comprising (1) at least one positive electrode made of lithiated metal oxide selected from the group consisting of $LiCoO_2$, $LiNiO_2$, $LiMn_2O_4$, $LiFePO_4$, and $LiCo_xNi_{1-x}O_2$ wherein the x is from 0.1 to 0.9, (2) at least one negative electrode made of carbonaceous material selected from the group consisting of coke and graphite, (3) a separator membrane, and (4) at least one electrolyte salt selected from the group consisting of $LiPF_6$, $LiBF_4$, $LiAsF_6$, $LiCl_4$, $LiN(SO_2CF_3)_2$, and a lithium perfluoro-sulfonate and the combination thereof, (2) at least a first non-aqueous solvent of cyclic carbonate and (3) at least a

second non-aqueous solvent being at least one of the nitrile compounds represented by the following general formula (I):



(I)

wherein R_1, R_2 are selected, independent of one another, from the group consisting of hydrogen, C_{1-3} alkyl, fluorinated C_{1-3} alkyl groups; wherein X is selected from carbonate radical having a chemical structure of  wherein R_3 is selected from the group consisting of C_{1-3} alkyl and fluorinated C_{1-3} alkyl, wherein the oxygen of the carbonate is chemically bonded to the carbon of the cyano group through no more than one carbon, wherein the first solvent is present in an amount of 5 % by weight or more, wherein the second solvent is present in an amount of from about 20 to about 95% by weight as of the total of non-aqueous solvents and said nitrile is electrochemically stable up to at least about 4.2V.